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ABSTRACT

Age is often ranked as a significant variable in research studies concerned with the measurement of intellectual and linguistic capacities, including reading. In fact, age is often cited as the cause of a decline in performance on such tasks. However, determining the social, psycho-social, and physiological status of subjects and applying appropriate statistical analyses may result in chronological age becoming only an artifact in gerontological research, rather than the determining factor. The significant factor in the comparison of subjects of differing ages may be loss of visual or auditory acuity or discrimination or lack of motivation, and not age per se. Establishing rapport with elderly subjects and explaining the purpose of the studies to them should result in more valid testing and measurement. It is hoped that attention to these factors will increase the credibility of future gerontological research. (KC)

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Improving the Quality of Research Among the Aged

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Introduction

Age is one of the most common factors mentioned as a variable in research studies concerned with the measurement of intellectual and linguistic capacities, including reading. And age often is reported as the significant variable; i.e., the aged perform more poorly on tasks supposedly measuring reading skills. This reported significance too often is interpreted by researchers as evidence supporting Thorndyke's hypothesis that "mental capacity declines after age 30 at the rate of approximately one per cent per year."

Physiological and psychological factors affecting response

Investigators have often failed to consider the importance of the physiological and psychological health of aged subjects, as well as the effects of acquired cautiousness on task performance. Goldstein and Shelly (1975), who examined the similarities and differences between psychological losses through aging and brain damage, argue that one cannot speak of mental decline with chronological aging in a global way.

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Granick, Kleban, and Weiss (1976) suggest that aged subjects may be more intellectually capable than their test performances suggest, and that hearing is an important variable to be considered when assessing cognitive functioning among the aged. Despite this warning, thirty-seven per cent of the studies published in the Journal of Gerontology between 1969-1974 failed to mention health of subjects, and only 16 per cent of the studies attempted to control health of subjects (Abrahams et al, 1975). Significant questions can be raised about the reliability, validity, and meaning of much of the currently available research in gerontology. It is unusual, for example for the hearing status of aged subjects to be reported, despite the fact that the stimulus materials in learning experiments are often orally presented. The same holds for other types of investigations which deal with intellectual factors, reaction time, and personality functioning, wherein visual and auditory perception and discrimination are involved. The factor of cautiousness, defined as a hesitancy to become involved when risk of failure is high, also influences performance of the aged on learning tasks. Older subjects may possess the same knowledge or ability as younger subjects, but the aged require longer to decide upon a response; i.e., they are more cautious (Eysenck, 1975).

Psychological problems of the aged which influence performance on learning tasks include: 1) anxiety produced by the learning situation; and 2) a lack of interest in what is being learned, resulting in a lack of docility on the part of the subject and a subsequent refusal to participate in the experiment. Too often investigators concentrate on rapid production and collection of experimental data, and rapport is never established with uneasy subjects. Reinforcement for successful completion of tasks too often consists of non-motivating tokens or insincere praise. One research very solemnly reported that aged subjects received one button for each correctly performed task. You can imagine the value most 70-year-old men attach to mismatched buttons. Rarely, if ever, is the purpose of the experimental task explained to the subject. Cunningham, Clayton, and Overton (1975), studying intelligence among the aged, report that the "older subjects were paid for their participation" and "given as much time as they needed to complete the task." Increased motivation and lessened anxiety surely accounted for a portion of the experimentors' significant results.

Controlling social, psycho-social and physiological factors

Emphasizing the effects of social, psycho-social and physiological factors upon performance of elderly subjects, researchers, including Maddox and Douglass (1974) suggest the

following as means of controlling these variables in research studies:

1) Life satisfaction and level of social activity. Morale and activity of subjects can be defined in terms of scores based on the activity and attitude inventories developed by Havighurst and associates (Cavan, Burgess, Havighurst, and Goldhamer, 1949). The activity inventory score cumulatively assesses differences in physical vitality, in intimate social contacts with family and friends, in use of leisure time, in organizational membership and participation, in work role maintenance. Possible scores range from a low of 0 to a high of 50. The attitude inventory includes items which, cumulatively, assess what might be called an individual's master definition of self in relationship to others and environment. Items include questions about health, friends, work, economic security, religion, personal usefulness, happiness, family relationships, etc. Possible scores range from a low of 0 to a high of 48.

2) Self-health assessment. Subjects can be classified by self-assessment of health status according to answers to the question: "How do you rate your health at the present time?" Basic response categories could include excellent, fair, good, and poor. A subject could possibly qualify his response by indicating "excellent for my age", "good for my age", etc.

3) Concern about health. Maddox and Douglass (1974) measured self-health concern on a 4-point scale in response to the question, "How concerned do you feel about your health troubles?" Answers ranged from 0 (not concerned) to 3 (chief problem at present.

4) Depression. Subjects should be rated by a psychiatrist as to presence and degree of depressive affect (not according to diagnosis of depression) after an extensive examination. A numerical scale ranking from 1 (none) to 5 (severe) might then be used for catagorization.

5) Reaction time. Standard tests of reaction time require a subject, in a visceral reaction time test, to press a response button in reaction to a signal light.

6) Physician's functional rating. Objective health status should be measured following an extensive medical evaluation by a qualified physician. The physician's estimate of the subject's capacity to function effectively in daily living can be determined only after comprehensive examinations, including a medical history, physical and neurological examination, and dermatological examinations.

7) Performance status. Performance status may be measured by the subject's ability to carry on his normal activities, or alternatively, his degree of dependence on help and nursing care.

Karnofsky (1948) suggests that the score be expressed in terms of percentage disability, with the possible range of scores from 100% (normal) to 10% (moribund).

8) Weight. Weight may be recorded in pounds, and possibly coded in terms of the nearest 10 pounds.

9) Visual acuity, right and left eyes. Visual acuity for both eyes can be assessed on a far distance vision test with correction.

10) Hearing loss, binaural. Binaural hearing loss may be measured in terms of percentage loss by a pure tone (MAICO) audiometric study.

Once these parameters are determined, statistical analyses, including ANCOVA and MANOVA can be used to determine the amount of variance evidenced by these factors and their interactions.

Techniques for establishing rapport and increasing motivation

The following techniques of establishing rapport and increasing motivation among elderly subjects should result in more valid testing:

1) Allow plenty of time to prepare each subject. Explain in clear, concise terms the purpose and characteristics of the task. Do not patronize elderly subjects. Age, ignorance, and senility do not necessarily walk hand-in-hand, despite the stereotypical presentation of the aged in learning materials.

2) Give a clear signal when the task is about to begin.

3) If the task extends over a long period of time, give adequate reminders of what the task is. Remember how much you appreciated reminders when you were learning to drive or to operate your microwave oven?

4) Allow plenty of response time. Prepare for the effects of the cautiousness factor. Frequent urging by the investigator to complete the task results in the aged subject's immediate random response as a means of reducing anxiety.

5) Allow older subjects to self-pace their performance, if at all possible.

6) Attempt to provide familiar materials and experiences. This increases the subject's self-confidence and motivation. It also prevents the researcher from employing equipment and tasks simply for the novelty of the experience.

7) Test in familiar environments free from distractions. Avoid clinical settings and white laboratory coats.

8) Attempt to obtain examiners who are attractive, young, and responsive and receptive to the elderly.

9) Provide reinforcements which are motivating to the subject. Avoid meaningless verbal praise. Most subjects are aware of the quality of their performance, and an examiner's credibility may be destroyed if he drowns the subject in praise.

10) Note behavioral factors which may affect test performance. Test results may be invalidated by anxiety, tension, etc.

Summary

Determining social, psycho-social and physiological status of subjects and applying appropriate statistical analyses may result in chronological age becoming an artifact in gerontological research. The significant factor in the comparision of subjects of differing ages may be loss of visual or auditory acuity or discrimination or lack of motivation, and not age per se. The establishment of rapport with elderly subjects should result in more valid testing and measurement. Attention to these factors will, hopefully, increase the credibility of future gerontological research.

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